Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (Currently Amended) An optical imaging system comprising:

a rod lens array comprising a plurality of rod lenses having a refractive index distribution in a radial direction that are arranged in two rows with their optical axes in parallel, and

a manuscript plane and an image plane that are located on opposite sides of the rod lens array,

wherein the refractive index distribution of the rod lenses is expressed by

$$Eq.\ 1 \quad n(r)^2 = n_0{}^2 \cdot \{1 - (g \cdot r)^2 + h_4 \cdot (g \cdot r)^4 + h_6 \cdot (g \cdot r)^6 + h_8 \cdot (g \cdot r)^8\}$$

where r is a radial distance from an optical axis of the rod lenses, n_0 is a refractive index on the optical axis of the rod lenses, and g, h_4, h_6 and h_8 are refractive index distribution coefficients,

~~the refractive index distribution coefficients h_4, h_6 and h_8 are on a spheroid in a Cartesian coordinate system with h_4 being x-axis, h_6 being y-axis and h_8 being z-axis~~when h_4 is an x coordinate, h_6 is a y coordinate, and h_8 is a z coordinate in a three-dimensional Cartesian coordinate system, a locus of the refractive index distribution coefficients h_4, h_6 and h_8 is a spheroid, and

the spheroid is defined by a vector X* that is expressed by

$$Eq.\ 2 \quad X^* = (x, y, z) = O^* + k_A A^* + k_B B^* + k_C C^*$$

where O* is a vector from an origin of the Cartesian coordinate system to a center of the spheroid, A*, B* and C* are vectors in the directions of a major axis, a mean axis and a minor axis of the spheroid, respectively, and k_A, k_B and k_C satisfy $k_A{}^2 + k_B{}^2 + k_C{}^2 \leq 1$.

2. (Original) The optical imaging system according to claim 1, wherein k_A, k_B and k_C satisfy

Eq. 3 $k_A^2 + k_B^2 + k_C^2 \leq 0.7.$

3. (Original) The optical imaging system according to claim 1, wherein the refractive index n_0 on the optical axis of the rod lenses is in a range of $1.4 \leq n_0 \leq 1.8$.

4. (Original) The optical imaging system according to claim 1, wherein a product $g \cdot r_0$ of the refractive index distribution coefficient g and a radius r_0 of a portion of each rod lens functioning as a lens is in a range of $0.04 \leq g \cdot r_0 \leq 0.27$.

5. (Original) The optical imaging system according to claim 1, wherein the refractive index distribution of the rod lenses is expressed by

Eq. 4 $n(r)^2 = n_0^2 \cdot \{1 - (g \cdot r)^2 + f(r)\}$

where f(r) is a function of r, and the f(r) satisfies

Eq. 5 $$h_{4A} \cdot (g \cdot r)^4 + h_{6A} \cdot (g \cdot r)^6 + h_{8A} \cdot (g \cdot r)^8 \leq f(r) \leq h_{4B} \cdot (g \cdot r)^4 + h_{6B} \cdot (g \cdot r)^6 + h_{8B} \cdot (g \cdot r)^8$$

for r in a range of $0 \leq r \leq r_0$ (r_0: a radius of a portion of each rod lens functioning as a lens) with respect to two groups of refractive index distribution coefficients (n_0, g, h_{4A}, h_{6A}, h_{8A}) and (n_0, g, h_{4B}, h_{6B}, h_{8B}) that are in the ranges determined by Equation 2.

6. (Original) The optical imaging system according to claim 1, wherein a radius r_0 of a portion of each rod lens functioning as a lens is in a range of $0.05 \text{ mm} \leq r_0 \leq 0.60 \text{ mm}$.

7. (Original) The optical imaging system according to claim 1, wherein r_0/R is in a range of $0.5 \leq r_0/R \leq 1.0$, where r_0 is a radius of a portion of each rod lens functioning as a lens and 2R is a distance between the optical axes of two neighboring rod lenses.

8. (Original) The optical imaging system according to claim 1, wherein Z_0/P is in a range of $0.5 \leq Z_0/P \leq 1.0$, where Z_0 is a length of the rod lenses and $P = \dot{2}/g$ is a one-pitch length of the rod lenses.

9. (Original) The optical imaging system according to claim 1, wherein an overlapping degree m is in a range of $0.9 \leq m \leq 5.0$, and the overlapping degree m is given by $m = X_0/2r_0$, where r_0 is a radius of a portion of each rod lens functioning as a lens and X_0 is an image radius that the rod lens projects onto the image plane.

10. (Original) The optical imaging system according to claim 1, wherein a parallel plane transparent substrate is arranged so that the manuscript plane is located at a front focal position of the rod lens array.

11. (Original) The optical imaging system according to claim 10, wherein the parallel plane transparent substrate is in contact with a lens surface of the rod lens array.